Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A device, comprising:

a substrate having a cavity extending into a surface of the substrate;

a cathode having an electron-emitting coating disposed thereon, ~~wherein~~ the cathode ~~is~~ suspended near ~~the opening of~~ the cavity in the substrate~~, wherein the cathode and the cavity are configured to form an air gap between the substrate and the cathode for providing a thermal barrier around the cathode~~;

an anode constructed of an electrically conductive material, wherein the anode is configured to receive electrons emitted by the cathode, ~~and wherein the anode is configured to produce an electrical current from the received electrons, wherein the anode is configured to communicate the electrical current to an external circuit~~;

a grid supported by at least one elongated support extending perpendicularly from the substrate, the grid forming at least one aperture configured for allowing the passage of electrons therethrough~~, wherein the grid is constructed of an electrically conductive material,~~ and wherein the grid is positioned between the cathode and the anode, but not directly in a path for electrons to travel from the cathode to the anode;

a seal for creating a controlled environment in an area surrounding the anode, the cathode, and the grid; and

a circuit configured for heating the cathode.

2. (Currently Amended) The device of claim 1 further comprising, at least one control circuit for selectively supplying a voltage to the grid to control the magnitude of the flow of electrons through the at least one aperture of the grid, thereby controlling the electrical current received by the anode.

3. (Currently Amended) The device of claim 1, wherein the grid further comprises a plurality of elongated conductive strips, wherein the plurality of elongated conductive strips are substantially parallel to one another, and wherein the at least one aperture of the grid is formed by the spacing between the plurality of elongated conductive strips.

4. (Canceled)

5. (Currently Amended) The device of claim ~~4~~1, wherein the ~~raised~~ at least one elongated support ~~is formed by~~comprises a stacked structure.

6. (Currently Amended) The device of claim 1, wherein the cathode is affixed to the substrate at opposite ends of the cathode, and wherein a substantial portion of the cathode is suspended over the cavity of the substrate, thereby forming ~~an air~~a gap between the cathode and substrate.

7. (Original) The device of claim 1, wherein the electron emitting coating is made of a low work function material.

8. (Original) The device of claim 1, wherein the electron emitting coating is made of a BaSrCa tricarbonate.

9. (Original) The device of claim 1, wherein the electron emitting coating includes BaSr.

10. (Original) The device of claim 1, wherein the electron emitting coating includes BaSrAl.

11. (Currently Amended) The device of claim 1, wherein the electron emitting coating includes thoriated tungsten.

12. (Original) The device of claim 1, wherein the electron emitting coating includes scandia.

13. (Original) The device of claim 1, wherein the electron emitting coating includes scandate.

14. (Original) The device of claim 1, wherein the electron emitting coating includes cesium.

15. (Original) The device of claim 1, wherein the grid is made of material selected from the group consisting of tungsten, gold, nickel, carbon, silver, and copper.

16. (Original) The device of claim 1, wherein the grid is made of material selected from the group consisting of molybdenum and tantalum.

17. (Original) The device of claim 1, wherein the grid contains a carbon-containing material.

18. (Original) The device of claim 1, wherein the grid contains a silicide.

19. (Original) The device of claim 1, wherein the controlled environment surrounding the grid, cathode, and anode has a vacuum drawn therein.

20. (Original) The device of claim 1, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, krypton, argon, and mercury.

21. (Currently Amended) A device, comprising:

a substrate having a cavity extending into a surface of the substrate;

a first member having an electron-emitting coating ~~disposed on the first member~~, wherein the first member is suspended near ~~the opening of~~ the cavity ~~in the substrate~~;

a second member constructed of an electrically conductive material~~, wherein the second member is~~ configured to receive electrons emitted by the first member~~,~~ and ~~wherein the second member is~~ configured to produce an electrical current for an external circuit from the received electrons;

a first grid supported by at least one elongated support extending perpendicularly from the substrate, the grid forming a first at least one aperture configured for allowing ~~the~~ passage of electrons therethrough~~, wherein the first grid is constructed of an electrically conductive material, wherein the first grid is positioned between the first and second member~~;

a second grid supported above the first grid and forming a second at least one aperture configured for allowing the passage of electrons therethrough~~, wherein the second grid is constructed of an electrically conductive material,~~ wherein the first grid and the second grid ~~is~~ are positioned between the first member and the second member, but not directly in a path for electrons to travel from the first member to the second member;

a seal for creating a controlled environment in an area surrounding the first and second grid and the first and second member; and

a circuit configured for heating the first member.

22. (Currently Amended) The device of claim 21, further comprising, at least one control circuit for selectively supplying a voltage to the first and second grid to control the magnitude of the flow of electrons through the first and second at least one apertures of the first and second grids, thereby controlling the electrical current received by the second member.

23. (Currently Amended) The device of claim 21, wherein the first and second at least one apertures ~~of the first and second grids~~ are aligned.

24. (Original) The device of claim 21, wherein the second grid is electrically connected to a ground source.

25. (Currently Amended) The device of claim 21, wherein the first and second grids each further comprise elongated conductive strips ~~is~~ mounted on ~~a raised support formed on the substrate~~the at least one elongated support extending perpendicularly from the substrate.

26. (Currently Amended) The device of claim 21, wherein the first member is affixed to the substrate at opposite ends of the first member, and wherein a substantial portion of the first member is suspended over the cavity of the substrate, thereby forming ~~an air~~a gap between the first member and substrate.

27. (Original) The device of claim 21, wherein the first and second grids are made of material selected from the group consisting of tungsten, gold, and tantalum.

28. (Currently Amended) The device of claim 21, wherein the controlled environment is an enclosed area surrounding the first and second grids, the cathode, and the anode, wherein the enclosed area has a vacuum drawn therein.

29. (Original) The device of claim 21, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, argon, and mercury.

30. (Currently Amended) A device, comprising:

a substrate having a cavity extending into a surface of the substrate;

a first member having an electron-emitting coating ~~disposed on the first member~~, wherein the first member is suspended near ~~the opening of~~ the cavity ~~in or above the substrate~~;

a second member ~~constructed of~~comprising an electrically conductive material~~, wherein the second member is~~ and configured to receive electrons emitted by the first member~~, and wherein the second member is configured to produce an electrical current for an external circuit from the received electrons~~;

a first grid forming ~~at least one~~a first aperture configured for allowing ~~the~~ passage of electrons therethrough, ~~wherein the first grid is constructed of an electrically conductive material, wherein the first grid is positioned between the first and second member~~;

a second grid forming ~~at least one~~a second aperture configured for allowing the passage of electrons therethrough, ~~wherein the second grid is constructed of an electrically conductive material, wherein the second grid is positioned between the first and second member~~;

a third grid forming ~~at least one~~a third aperture configured for allowing the passage of electrons therethrough, ~~wherein the second grid is constructed of an electrically conductive material,~~ wherein the first, second and third grids ~~is~~ are positioned between the first member and the second member, but not directly in a path for electrons to travel from the first member to the second member;

wherein the first, second and third grids are supported by at least one elongated support extending perpendicularly from the substrate,

a seal for creating a controlled environment in an area surrounding the first, second, and

third grid, and the first and second member; and

a circuit configured for heating the first member.

31. (Currently Amended) The device of claim 30, further comprising, at least one control circuit for selectively supplying a voltage to the first, second and third grid to control the magnitude of the flow of electrons through the first, second and third apertures ~~of the grid~~, thereby controlling the electrical current received by the second member.

32. (Currently Amended) The device of claim 30, wherein the first, second and third apertures ~~of the first and second grids~~ are aligned.

33. (Original) The device of claim 30, wherein the second grid is electrically connected to a ground source.

34. (Currently Amended) The device of claim 30, wherein the first, second and third grids each comprise elongated conductive strips ~~is~~ mounted on the at least one elongated support extending perpendicularly from the substrate~~a raised support formed on the substrate~~.

35. (Currently Amended) The device of claim 30, wherein the first member is affixed to the substrate at opposite ends of the first member, and wherein a substantial portion of the first member is suspended over the cavity of the substrate, thereby forming ~~an air~~a gap between the first member and substrate.

36. (Currently Amended) The device of claim 30, wherein the first, ~~and~~ second and third grids ~~are made of material selected from the group consisting~~comprise at least one of tungsten, gold, nickel, molybdenum, platinum, titanium and tantalum.

37. (Currently Amended) The device of claim 30, wherein the controlled environment is an enclosed area surrounding the first, second and third grids, the cathode, and the anode, wherein the enclosed area has a vacuum drawn therein.

38. (Original) The device of claim 30, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, argon, and mercury.

39. (Currently Amended) A device, comprising:

a substrate having a cavity extending into at least one surface of the substrate;

a first member having electron emitting properties, wherein the first member is suspended near the opening of the cavity of the substrate, wherein the first member comprises an oxide layer in contact with a first conductive layer~~and the cavity are configured to form an air gap between the substrate and the first member for providing a thermal barrier around the first member~~;

a second member constructed of an electrically conductive material, ~~wherein the second member is positioned over the cavity of the substrate,~~ wherein the second member is configured to receive electrons emitted by the first member, and wherein the second member is configured to produce an electrical current to an external source from the received electrons;

a seal for creating a controlled environment in an area surrounding the first and second member; and

a circuit configured for heating the first member.

40. (Currently Amended) The device of claim 39, wherein the controlled environment is an enclosed area surrounding the first member and ~~anode~~the second member, wherein the enclosed area has a vacuum drawn therein.

41. (Original) The device of claim 39, wherein the controlled environment is an enclosed area filled with a gas selected from the group consisting of hydrogen, helium, argon, and mercury.

42. (Canceled)

43. (Canceled)

44. (Currently Amended) A device, comprising:

a substrate means having a cavity that extends into the substrate;

a cathode means having an electron-emitting coating disposed thereon, wherein the cathode means is suspended near the opening of the cavity in the substrate means~~, wherein the cathode means and the cavity are configured to form an air gap between the substrate means and the cathode means for providing a thermal barrier around the cathode means~~;

an anode means constructed of an electrically conductive material, wherein the anode means is configured to receive electrons emitted by the cathode means~~, and wherein the anode means is configured to produce an electrical current from the received electrons, wherein the anode means is configured to communicate the electrical current to an external circuit~~;

a grid means supported on at least one elongated support extending perpendicularly from the substrate forming at least one aperture configured for allowing ~~the~~ passage of electrons therethrough, ~~wherein the grid means is constructed of an electrically conductive material,~~ and wherein the grid means is positioned between the anode means and the cathode means, but not directly in a path for electrons to travel from the cathode means to the anode;

a seal for creating a controlled environment in an area surrounding the anode means, the cathode means, and the grid means; and

a circuit configured for heating the cathode means.

45. (Currently Amended) The device of claim 44, further comprising, at least one control circuit for selectively supplying a voltage to the grid means to control the magnitude of ~~the~~ flow of electrons through the at least one aperture of the grid means, thereby controlling the electrical current received by the anode means.